

U.S. Department of Interior
National Park Service
Midwest Regional Office
St. Croix National Scenic Riverway
Environmental Assessment
02/04/03

Restore Cap Creek to a Brook Trout Stream: the Schultz Pond Project.

1.0 Purpose and Need

The purposes of the Upper St. Croix River and its Namekagon tributary are to preserve those rivers in a natural condition as relatively free-flowing rivers, protect and enhance the exceptional natural, scenic, and cultural resources of the riverway for current and future generations, and to provide high-quality recreational opportunities that do not detract from the exceptional natural, scenic, cultural, and aesthetic resources and values of the riverway. These purposes are documented in the General Management Plan for the Upper St. Croix and Namekagon Rivers (NPS, 1998).

Parallel to those purposes are the general purposes of the proposed restoration project: to preserve those rivers in a natural condition, protect and enhance the exceptional natural, and scenic resources, and to provide high-quality recreational opportunities.

The specific **purposes** of the proposed project are to restore a small section of Riverway land that was heavily influenced by human activities to its original natural condition. The existing condition is a highly manipulated landscape in which a trout stream was routed away from a springs area, and the former channel area was excavated to form a series of small ponds around the springs. Since the former landscape was a native brook trout stream, another purpose of the project is to restore brook trout habitat in an area where such habitat is diminishing.

The **need** for the project is to restore human-influenced landscapes to their natural state, to provide for a high-quality visitor experience, and to not only protect fish and wildlife habitat, but also to enhance it, as called for in the Wild and Scenic Rivers Act.

The proposed project general location can be found on Figure 1. The area is known as Schultz' Ponds and Spring and is adjacent to Cap Creek near Cable, Wisconsin. Further information is provided below in the Project Background and Scope section

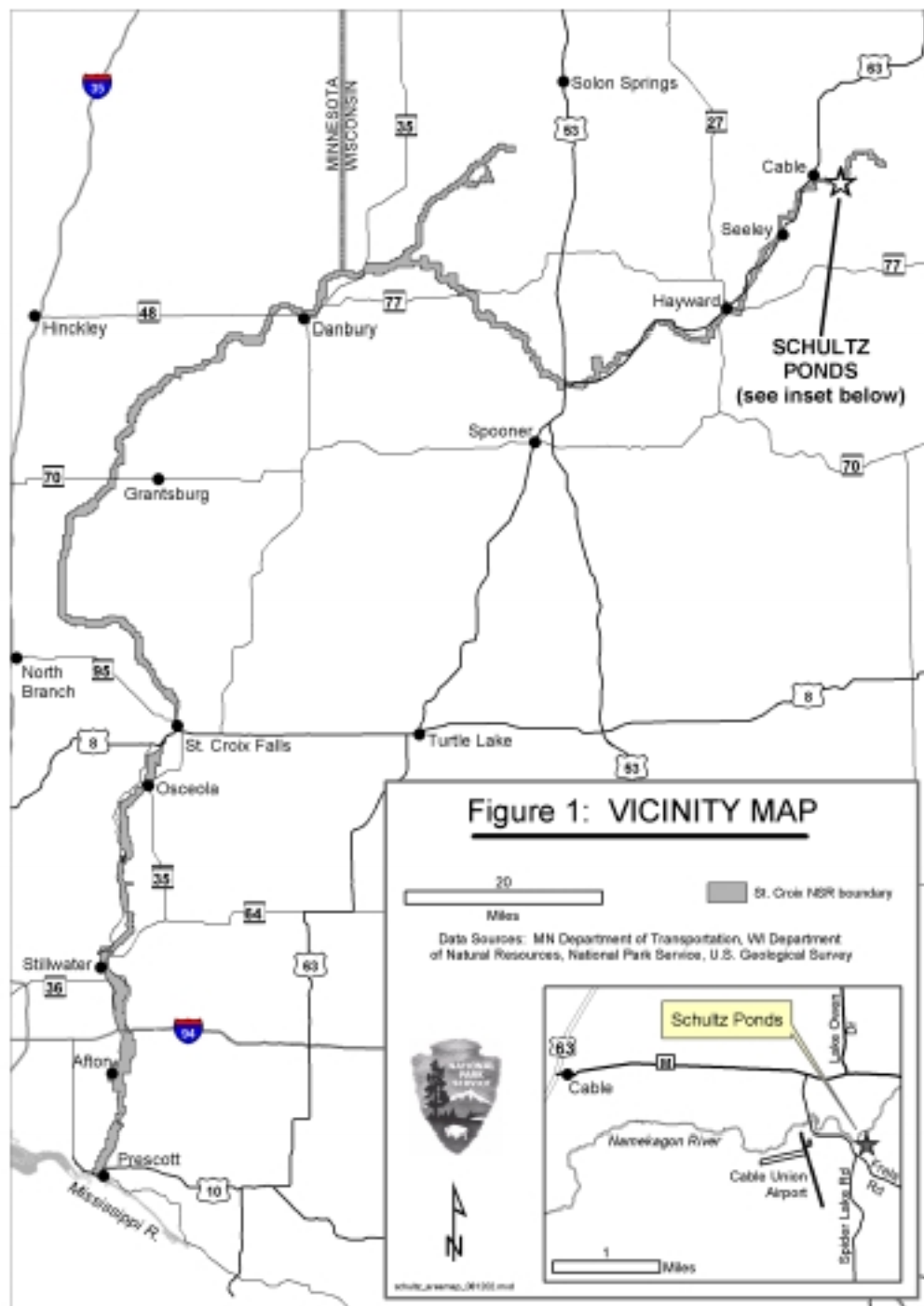


Figure 1: The proposed project area is located near Cable, Wisconsin along the Namekagon River.

2.0 Background

2.1 Project Background and Scope

The St. Croix National Scenic Riverway (Riverway), which includes the Namekagon River, was established in 1968 under the Wild and Scenic Rivers Act. In addition to the scenic qualities, the enabling legislation recognized the fisheries resources of the two rivers. To help protect these resources, Congress authorized the Secretary of the Interior to purchase land and scenic easements in a quarter-mile to half-mile corridor along the two rivers. This included residential and developed lands along the Riverway. Since acquisition, the NPS has been removing buildings and residences and restoring sites to more natural conditions. One of these sites was the Schultz's Silver Springs (Schultz Ponds), a private trout hatchery near Cable, Wisconsin. See Vicinity Map on Figure 1. The hatchery was built in the 1950's on the broad valley of Cap Creek and the nearby Namekagon River. The creek was diverted out of the area so that the hatchery could capitalize on the springs in the area. Shallow inter-linked ponds were excavated with connections to the springs. Outlet structures on each pond maintained water levels.

The buildings at Schultz Ponds were removed in 1989, but the shallow earth and grass-lined ponds were left as is except for the removal of the outlet control structures. See Figure 2 for an aerial view of the project area. The springs supplying water to the ponds are scattered throughout the area. Their cumulative production is at least 4.4 cubic feet per second or nearly 2000 gallons per minute, as measured during an Interdisciplinary Team field visit. Despite their excellent temperature (average temperature 45 degrees Fahrenheit) and good water quality, the ponds are of limited benefit to aquatic life due to their lack of cover and shallow depth. The WDNR and the NPS propose to convert the area back to a brook trout stream by excavating a meandering channel, filling in the sections of the pond not needed for channel area, providing suitable substrate, planting and installing cover, diverting Cap Creek back into the newly restored channel, and restoring brook trout habitat. WDNR has Trout Stamp Funds available for their involvement in the restoration project and the NPS has Natural Resources Preservation Program-Disturbed Lands funding available for the restoration project, if selected as the preferred alternative through this National Environmental Policy Act planning and Environmental Assessment process.



Figure 2: Aerial view (July 16, 1996) of the Cap Creek, Schultz Ponds, and Namekagon River near Cable, Wisconsin. Streamflow is right to left.

The ponds are located on the broad flat valley of the Namekagon River, see Figure 2. Although the banks of the ponds are well vegetated, their unnatural shape and placement are out of character in the otherwise natural setting of the Riverway. The ponds' shallow nature and lack of in-water protective cover leave them as unproductive aquatic habitat, although they do provide limited spawning and nursery habitat for a small remnant brook trout and wild brown and rainbow trout (Frank Pratt, 2002, personal communications).

Brook trout were once abundant in the upper Namekagon River and its coldwater tributaries (Ferrin, et.al. 2001). Habitat destruction, especially related to beaver dams, warming temperatures, and logging have altered the aquatic community to favor more warm-water tolerant species, such as the introduced brown trout and rainbow trout. Fisheries managers are concerned about the potential extirpation of brook trout from the Namekagon River system.

Historical records and journal accounts (MacQuarrie, 1944) indicate that the area was originally a trout stream, fed by a series of high volume bank springs flowing into Cap Creek. Over forty years of fish culture operations had

transformed the drainage into a series of connected, excavated ponds. While useful for private aquaculture, the pond environment disrupts normal spawning and nursery dynamics, promotes sedimentation and warming, and because of lack of depth and cover allows for predation by birds and mammals.

2.2 Relationship to Other Actions and Plans

This project is priority 4 in the draft Fisheries Management Plan for the St. Croix and Namekagon Rivers (Ferrin et al. 2001). The three higher priorities also deal with improving or restoring brook trout habitat. There were a total of 20 projects identified by the interagency fisheries planning team that developed the plan.

The General Management Plan, approved in 1998 (NPS, 1998), classified the upper Namekagon River as a Near-Primitive Northwoods Management Zone. The management goal for that zone is to obtain a high degree of naturalness and a very low degree of overall development.

The WDNR is planning to restore other sections of Cap Creek as part of its program of restoring brook trout habitat in northwestern Wisconsin (WDNR, 2002, personal communication with Frank Pratt).

The project area is within the ceded territory of the Chippewa Tribal Governments. Treaty rights are acknowledged and fully honored within this area and all other areas of the St. Croix National Scenic Riverway within the ceded territory.

2.3 Scoping Issues

The National Environmental Policy Act requires public involvement in our decision making process. The process of obtaining input from the public and other agencies is called "scoping" and takes place throughout the planning process. A news release describing the project and soliciting public input was mailed to area newspapers on August 15, 2002. Individual copies of the press release were mailed to Cable Town Office, Cable Natural History Museum, Great Lakes Indian Fish and Wildlife Commission, Telemark Lodge, and the son of the former owner of the property. To date, three individuals have submitted their comments regarding the project. One caller suggested we retain the western most pond and deepen it for trout refuge. Another caller was concerned about spending millions of taxpayer dollars to disturb the area. Two emails were received from one writer in reference to the project. The writer was concerned about the springs and their spiritual nature, the animals that use the area, the introduction of exotics, the cost of the project, mercury in fish, and potential impacts to archeological sites.

Besides those issues, the following issues were raised by the Riverway's Interdisciplinary Team.

1. Water quality
2. Landscape changes
3. Noise during implementation
4. Truck traffic
5. Fishing
6. Nature trail
7. Targeting single species
8. Introduction of exotic species

From this list of issues, the following impact topics were selected for further analyses in the Section 5, Environmental Consequences:

1. Soils
2. Water Resources and Water Quality
3. Wetlands
4. Ecological Resources (plants, animals, habitat, threatened and endangered species, and exotic species)
5. Recreation/Visitor Use/Scenic Resources
6. Prehistoric and Historic Resources

These impact topics were believed to be the items most likely to be affected by any type of land disturbance in the project area. Regarding the issue of mercury in fish, that is of concern to fish managers throughout the upper Midwest, but is beyond the scope of this project.

2.4 Applicable Regulatory Requirements and Coordination

This environmental assessment is being prepared in accordance with NPS Director's Order 12-National Environmental Policy Act Guidelines. Regulatory compliance which might be applicable to the alternatives addressed in this EA include:

- Section 404 of the Clean Water Act permitting through the U.S. Army Corps of Engineers. To insure timeliness of the permitting process, application to the Corps of Engineers has been made for a permit for the restoration alternative, in the event it is the selected alternative.
- Section 401 of the Clean Water Act, state water quality certification from the Wisconsin Department of Natural Resources. To insure timeliness of the permitting process, application to the WDNR has been made for a permit for the restoration alternative, in the event it is the selected alternative.
- Section 10 of the Rivers and Harbors Act of 1899, fill in navigable waters of the United States, through the U.S. Army Corps of Engineers. To insure timeliness of the permitting process, application has been made to the Corps of Engineers for a permit for the restoration alternative, in the event it is the selected alternative.
- Section 7(a) of the Wild and Scenic Rivers Act, water resources projects. Section 7(a) evaluation is being completed as part of this environmental assessment. A determination would be made in association with this

environmental assessment and included in the decision document for this environmental assessment.

- Section 7 of the Endangered Species Act, consultation with the U.S. Fish and Wildlife Service. Informal consultation has been initiated and a species list has been received.
- Executive Order 11990, protection of wetlands. Addressed as part of this environmental assessment.
- Executive Order 11988, protection of floodplains. Addressed as part of this environmental assessment.
- Section 106 of the National Historic Preservation Act, impacting prehistoric or historic archaeological sites or cultural landscapes. Completed prior to drafting this environmental assessment.
- Coordination with the Great Lakes Indian Fish and Wildlife Service. Initiated as part of the public scoping process.

3.0 Alternatives

3.1 Alternative A: No Action

The No-Action Alternative would maintain the current landscape of the Schultz Ponds area. Mowing of the trails around the ponds would be continued as staff and funding allow. No other management actions would occur here.

3.2 Alternative B: The Restoration Alternative

The project being proposed involves several components. These include:

- install a rock ditch plug on the channelized section of Cap Creek and restore Cap Creek to its original route 1350 feet through the former fish hatchery
- using excavated material (approximately 3500 cubic yards) from the new stream channel, fill some of the ponds that have low habitat value and convert them to riparian habitat. An additional 2700 cubic yards of material would be needed from an off-site sand and gravel pit.
- protect the springs by incorporating them into the new channel system
- provide a near-natural stream course with good habitat which includes cover, spawning habitat, and substrates that attract a large variety of aquatic insects
- to prevent streambank erosion, stabilize the lower streambanks (nearest the water) using geotextile fabric covered with clean, earth-toned rock riprap from a local quarry ; stabilize the upper streambanks with native vegetation
- revegetate the area with native trees, shrubs, and grasses
- install erosion mats or mulch depending on slope
- restock the stream with native brook trout collected elsewhere in the Namekagon River system
- monitor the results over the next several years.
- The activities would be accomplished in late spring or early summer using heavy equipment including tracked excavator, backhoe, small bulldozer, dump trucks, Bobcat®-type tractor, as well as hand tools and manual labor.

Most of the heavy equipment work would be done from high ground as the excavator reaches out into the stream channel or pond to either excavate or dump material.

- obliterate existing trails. A new trail, educational exhibits, and a footbridge across the stream may be considered in the future but are not part of this project.
- prevent the establishment of exotic plants through continual monitoring and eradication. Equipment used in the restoration plan would be cleaned off-site to remove any seeds or plant materials to help prevent the spread of exotics.

The project would comply with all applicable local, state, and federal laws and regulations. The timing of specific project components would ensure that the project is done in a manner that exposes the least amount of soil at any one time. State of the art erosion control measures would be instituted including floating sediment barriers, silt fences, sediment traps, and temporary rerouting of water. A detailed erosion control plan would be part of the contract requirements and approved by the NPS and WDNR. The project area may need to be closed to access while it stabilizes. As determined by the WDNR, only catch and release fishing would be allowed in the project area.

3.3 Alternatives Considered but Rejected: Improve Pond Habitat

Under one alternative, the ponds would be retained in their current condition but habitat improvement measures would be added. This would include logs, boulders, treetops, and other habitat structure that provides cover and substrate for aquatic organisms. Work would be done by hand with work crews and light equipment such as wheelbarrows. Trails around the ponds would no longer be mowed, and shrubs and woody vegetation would eventually invade the area. The ponds would not be stocked and only those with connections to the Namekagon River would provide refuge to fish from the river. The public would not be encouraged or prohibited from visiting the area.

This alternative was rejected from further consideration because it does not meet the purpose and need for this project stated earlier in this document. Spring-fed ponds are plentiful in northwestern Wisconsin. Cold-water stream systems are becoming increasingly scarce.

3.4 Environmentally Preferred Alternative

National Park Service policy requires the identification of the alternative that would best promote the national environmental policy expressed in the National Environmental Policy Act Section 101(b). This policy includes the following criteria:

- fulfill the responsibilities of each generation as trustee of the environment for succeeding generations. (The restoration alternative best meets this criteria by converting the site to a more sustainable and natural setting.)

- ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings. (The restoration alternative provides a more productive and pleasing surrounding.)
- attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences. (The restoration alternative best meets this criteria by converting the site to a native brook trout stream, with springs, adjacent wetlands, riparian habitat, and uplands.)
- preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice. (The restoration alternative best meets this criteria by restoring the natural aspects of the site while providing a wide-diversity of cold-water dependent organisms.)
- achieve a balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities. (The restoration alternative best meets this criteria by providing additional trout habitat, a diminishing resource.)
- enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources. (While the restoration alternative requires use of earth materials gathered elsewhere, the long-term enhancement of the quality of the site is best met by the restoration alternative.)

Figure 3: Cap Creek Restoration, Alternative B

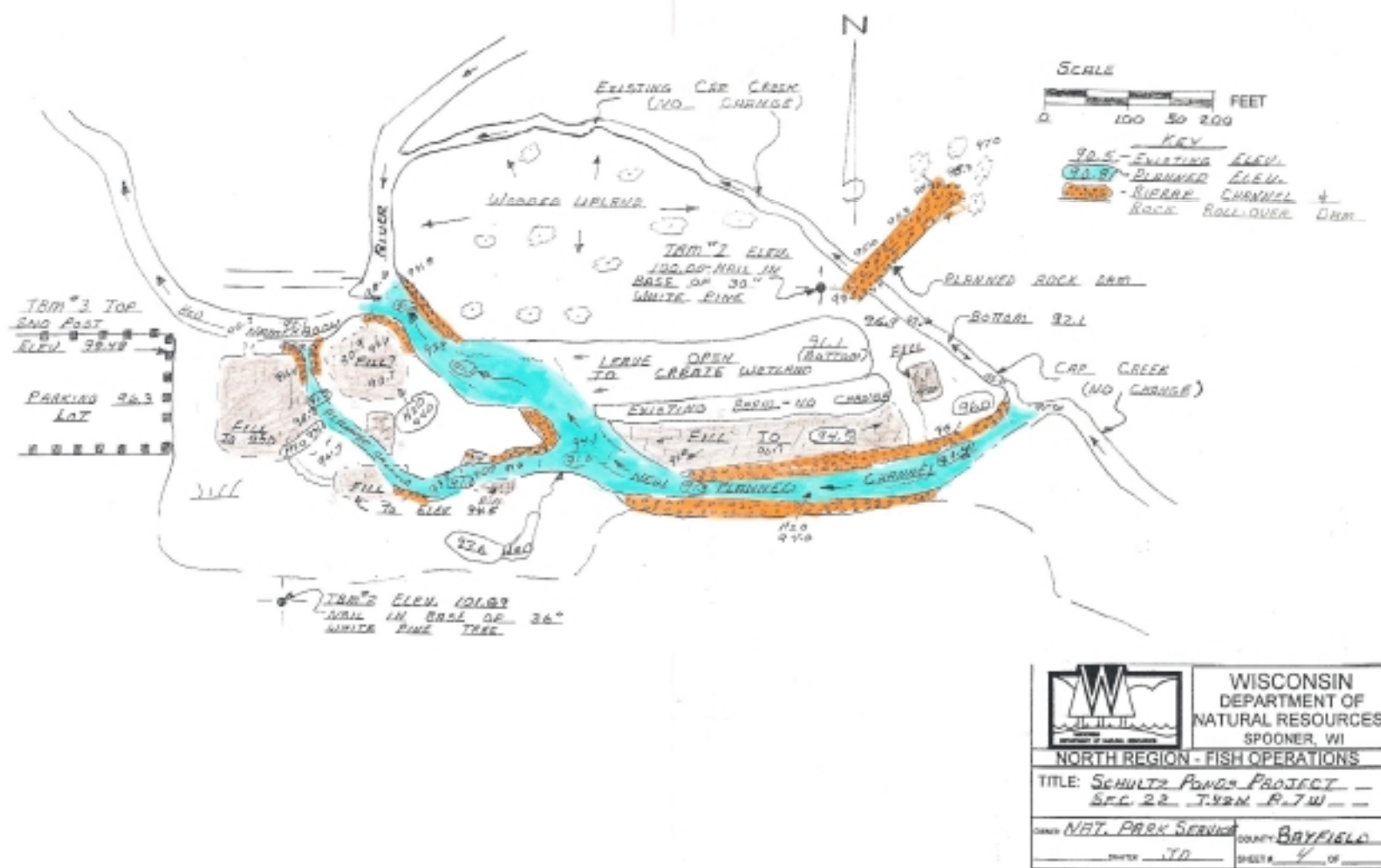


Table 1: Summary Comparison of Alternatives and Environmental Consequences

Impact Issue	Alternative A: No Action	Alternative B: Restore Cap Creek
Soils	No changes	Short-term soil disturbance, no long-term impacts
Water Resources and Water Quality	No changes	Short-term localized sedimentation related to construction activities until slopes are stabilized, no long-term impacts
Wetlands	No negative or positive impacts	Some of the ponds would be filled or serve as a segment of the stream channel. Productive wetland would be retained. Net gain in wetlands.
Ecological Resources- Plants, Animals, and Habitat	No change	Change from pond to stream ecosystem and move towards forested stream setting.
Threatened and Endangered Species	No impacts	Short-term disturbance but no significant impact
Prehistoric and Historic Resources	No impacts	No impacts to known features. Slight risk of disturbing buried resources.
Recreation and Visitor Use Experience	No changes	Positive improvement in experience Short-term noise and traffic increase
Scenic Resources	No changes	Major positive improvements in scenic values, more natural setting

4.0 Affected Environment

Topics not discussed in this section that are unaffected by either of the three alternatives include air quality, geology, and climate. Noise is discussed in Section 4.6 Recreation and Visitor Use Section since it is a negligible short-term impact under one of the two alternatives (B).

4.1 Soils

Soils in the project area have been heavily impacted from earth-moving activities. The 1961 USDA Soil Conservation Service Soil Survey for Bayfield County

identifies the majority of the soil in the area as "Rifle peat association" which is an organic soil. The soils along Cap Creek are identified as "Alluvial land".

In a soils interpretation project specific to the Riverway (USDA, 1971), the Rifle series was described as mucky peat with poor to unsuitable ratings for topsoil, sand, gravel, or roadfill. For degree of limitation, it had very severe to severe limitations for septic tank filter fields, sewage lagoons, land fill, highways, streets, dwellings, light industries. For pond reservoirs, the limitation was listed as "high water table; dugout ponds feasible" which is exactly the use made of the area. For embankments, dams, and dikes, this soil type was characterized as "organic soil, unstable; very pervious."

The Alluvial land series was also described in USDA, 1971. A brief soil description indicated the soils are deep, moderately well to somewhat poorly drained soils formed in stream sediments. These are nearly level, moderately permeable areas with high available water capacity and subject to occasional flooding. As a resource material, the soils are fair to variable for topsoil, variable for sand and gravel, and poor for roadfill. The degree of limitation is very severe to moderate for septic tank filter fields, sewage lagoons, landfills, highways, streets, foundations, and light industries. For pond reservoir areas, the soils have moderate permeability. For embankments, dams, and dikes, the soils have moderate permeability with a piping hazard (leakage along a specific small corridor, like the void left by a plant root).

Both soil series are rated as good for wetland food and cover plants, and shallow and deep water developments.

4.2 Water Resources and Water Quality

The Namekagon River is classified by the state as an Outstanding Resource Water, giving it the highest level of protection. The nearest water quality monitoring station is downstream about seven miles where the US Geological Survey has a stream gaging site. The station is currently inactive after the intensive monitoring phase of the National Water Quality Assessment Program terminated. The last year of monitoring was water year 1998 (October 1, 1997 to September 30, 1998). Table 2 shows the ranges for selected parameters for the water year (USGS, 1999).

In summary, this is indicative of the relatively good water quality in the Namekagon River, which fully meets state standards. The water is normally clear with some evidence of suspended sediment, and a brown stain from tannic acids leached from the hundreds of acres of wetlands in its watershed.

**Table 2: Selected Water Quality Parameters- Namekagon River
10/1/1997 to 9/30/1998**

Parameter	Range	Parameter	Range
Discharge cfs	51-473	Specific Conductance	108-164
Drainage area	126 sq.miles		
pH	6.8-8.3	Temperature C	0.1-23.4
Dissolved Oxygen	9.2-14.3	Acid Neutralizing Capacity	22-76
Calcium* mg/l	6.9-22	Magnesium* mg/l	2.0-6.1
Sodium* mg/l	1.4-2.8	Potassium* mg/l	0.43-0.73
Bicarbonate* mg/l	24-99	Alkalinity* mg/l	20-81
Sulfate* mg/l	2.6-4.6	Chloride* mg/l	1.8-16.0
Silica* mg/l	7.7-16	Solids residue mg/l @180 C	55-108
NO ₂ +NO ₃ * mg/l	<0.050-0.839	Ammonia*N mg/l	<0.015-0.057
Phosphorus, Total mg/l	<0.010-0.044	Iron* micrograms/l	93-220
Manganese* mg/l	8.8-25	Organic Carbon* mg/l	2.2-11.0
Sediment, suspended mg/l	1-10		
* measured as dissolved	<i>Range is over 12 monthly readings</i>		

No water quality work has been done on Cap Creek or the ponds in the project area except for pH, temperature, dissolved oxygen, and specific conductance during an interdisciplinary site reconnaissance of the project area. (See Table 3.)

Table 3: Schultz Ponds Area Water Resource Investigations

Location	Temp C	pH	Dis. Oxygen	Turbidity	Specific Cond.	Discharge Cubic feet/sec
Namekagon above Cap	25. 1	8.5	9.4	0	131	10.3*
Cap Creek	23.2	7.7	7.9	0	157	1.8*
Outlet 1	13.7	7.7	6.9	0	157	0.1*
Outlet 2	9.0	8.1	11.8	0	131	1.8*
Outlet 3	8.7	7.8	10.8	4.1	130	2.5*
Spring 1	7.3	7.6	8.7	1.7	127	NA
Spring 2	7.1	7.7	9.0	0	128	NA
Spring 3	7.6	7.7	8.5	0	129	NA
Namekagon Below ponds	18.8	7.8	9.0	0	136	21.7

The data in Table 3 show the tremendous influence the spring outlets have on the Namekagon River. The measured outflow total, at 4.41 cfs (1980 gallons per minute), was over 36 percent of the flow of the Namekagon after the confluence with Cap Creek. It also dropped the water temperature from 25.1 degree Centigrade to 18.8 degrees. The discharge data for the Namekagon below the ponds also showed the influence of unaccounted springs (springs which cannot be seen and measured directly) with a total flow of 21.7 cfs in the Namekagon (*from Table 3, only 16.5 cfs is accounted for). Although no turbidity or suspended sediment measurements were conducted, the water coming out of the springs area is extremely clear and unstained with no indication of suspended material.

Cap Creek has a watershed area of 5067 acres with land coverage consisting of wetlands (32%), forested (61%), agriculture (0.5%), and grassland (5%). Beaver have had an extensive influence on this former trout stream, converting it into a series of beaver dams, warm water pools, and large wetlands. Despite its watershed size, it produced only 1.83 cfs during the field reconnaissance in 1998. This may reflect the influence of the beaver dams in the watershed. The WDNR expects to develop and implement a long-term restoration plan for the remainder of the watershed (Frank Pratt, personal communication, 2002).

4.2.1 Floodplains

In the summer of 2000, a bridge across the Namekagon 0.7 miles downstream of Cap Creek was replaced. The engineering calculations for the project found the 100-year flood elevation to be 1336.12 feet. The average slope in the seven miles from Cap Creek to the USGS gaging station is 0.1 percent (Macbeth, et al, 1999). For the 0.7 mile stretch to the bridge, the drop is approximately 3.7 feet ($0.1\% \times 0.7 \times 5280$). The elevation of the banks at the ponds area is 1340 feet. Therefore, it is predicted the ponds area are slightly above the 100-year flood elevation of $1336.12 + 3.7$ feet or 1339.8 feet. These are rough estimates and are not validated by extensive hydrologic analyses. Anecdotally, there is no evidence in the pond area of overbank flow from flood events, and a long-term employee of the Riverway could recall no time at which the river overflowed its banks at this location (Robert Christiansen, 2002, personal communication via email).

4.3 Wetlands

The ponds and their shorelines would be considered jurisdictional wetlands where they meet the three minimum criteria of hydrology (long periods of inundation), water-saturated soils, and wetland vegetation. Most of the ponds have no vegetation, as described below in the Ecological Resources section. The edges of all of the ponds meet all of the criteria, and nearly all of Pond 5 also meets the wetlands criteria. See Figure 2 for location of the ponds. Corps of Engineers Section 404 and Section 10 permits for dredge and fill have been

applied for concurrent with development of this environmental assessment to insure timely processing of the permit, assuming the preferred alternative is selected.

4.4 Ecological Resources-Plants, Animals, and Habitat

4.4.1 Site Description

There are five ponds which make up the Schultz Ponds complex, see Figure 2. Pond 5 is the largest and most stagnant of the ponds and has the most aquatic vegetation. It contains sago pondweed and floating pondweed in addition to the elodea that is found in most of the ponds in locations where the water runs the fastest, that is, where the ponds connect. All ponds have some lesser duckweed and various amounts of filamentous blue-green algae but are otherwise mostly without aquatic vegetation.

Generally speaking, the parking lot resides on the western edge of the area with the Namekagon separated from ponds 1,2 and 5 by a low dike. The north side of the area is bordered by a mixed pine-hardwood forest dominated by white and red pine. To the northeast lay a scrub-shrub wetland dominated by speckled alder through which Cap Creek now flows. The southeast side is bordered by a small woodland dominated by jack pine. The southwest corner has a small woodland dominated by willows and jack pine. Most of the remaining southern edge is open old field with a good amount of native plants.

The Schultz house previously stood on the south side of the ponds and appeared to have plentiful native prairie plants in that area as well as a number of exotic invasives. Those plants closest to the ponds include black-eyed susan, orange hawkweed, spotted knapweed, common mullein and yellow Goatsbeard. In addition some domestic plants (e.g. snow-on-the-mountain and lupines) were present. The highly invasive purple loosestrife is known to exist in the Namekagon watershed but has not been found in this section of the river or Cap Creek.

Most of the area has an open buffer zone separating the ponds from wooded areas. However the eastern end of the south perimeter of pond 5 has a small woodland abutting the pond. Here were found typical woodland plants including Canada mayflower and starflower.

A complete listing of species observed in the area during a field survey among and adjacent to the ponds area can be found in Appendix A. There were 98 species of trees, shrubs, woody perennials, herbaceous, and aquatic plants, 24 species of birds, 5 species of mammals, 2 fish species, 2 herptofauna species, and 16 species of invertebrates. Not all species are in the zone of disturbance for the restoration alternative.

4.5 Threatened and Endangered Species

None of the plants or animals found in the pond area are on either the Wisconsin or Federal list of threatened or endangered species. Correspondence from the U.S. Fish and Wildlife Service (email message from Mr. Joel Trick, September 9, 2002) list the following species as occurring in Bayfield County: gray wolf, Canada lynx, bald eagle, Fassett's locoweed. Fassett's locoweed and the Canada lynx have never been documented within the Riverway. Eagles are found in the vicinity but the nearest known nest is more than 10 miles away. A pack of gray wolves (Smokey Hill Pack) is known to traverse the area.

4.6 Recreation, Visitor Use, and Scenic Resources

The ponds are visited sporadically, primarily by local visitors who have knowledge of the site. The mowed trails around the ponds show little wear. The main use of the area is the canoe landing and for fishing in the Namekagon River from the riverbank. A one-table picnic area is located adjacent to the parking lot. There are no toilet facilities due to the low use of the site. None of the alternatives alters the use of the area as a fishing, picnicking, and canoe landing location. Canoeists put in and take out at this landing, as well as pass by this landing from upstream origins. Viewing the springs provides a pleasant experience, especially the springs which seem to boil from the sandy bottom of one of the ponds.

The visitor experience in this locale is affected by a variety of local noise sources. These include the nearby Cable-Union Airport which provides landing and take-off capabilities for small aircraft. Another noise source is the Telemark/Spider Lake Road which is the main road into Telemark Resort and other recreational and residential areas. Noise from these sources is year-round and intermittent.

While the ponds are surrounded by well-vegetated banks, the area in general has an atmosphere of unnaturalness. The Namekagon River in this stretch is classified by the General Management Plan as Near Primitive Northwoods. Approaching the site by canoe, one observes a zone of low vegetation, a flat bench extending back from the river with no trees other than a few scattered alder, and then the upland areas which do have trees.

4.7 Wild and Scenic River

The Namekagon River is a component of the National Wild and Scenic River System, along with its namesake, the St. Croix National Scenic Riverway. This status gives it extraordinary protection under the Wild and Scenic River Act to insure that the outstandingly remarkable values (ORVs) for which it was included in the system are fully protected. The ORVs for the Namekagon include its scenery, recreational, geologic, fish and wildlife, historic, cultural, and other values which must be protected in their free-flowing condition for the benefit and enjoyment of present and future generations. The project area is within the

boundaries of the St. Croix National Scenic Riverway and is subject to the Wild and Scenic Rivers Act. The proposed restoration project is a water-resource project within the definitions of the act and is therefore scrutinized for its affects on the ORVs of the Namekagon River.

5.0 Environmental Consequences

5.1 Impacts on Soils

5.1.1 Methodology

Impact analysis focused on the effects of alternatives and the interaction of existing soil conditions at the project location in terms of erosion potential.

Basis for analysis:

Erosion potential-Impacts of the alternatives on short and long-term erosion potential at the site based on the soil types present.

Intensity, Duration, and Type of Impact

- **Negligible-** No change to very small change in erosion potential.
- **Minor-**Very limited soil disturbance having some possible short-term and localized erosion.
- **Moderate-**Large scale disturbance of five-acre or more of soil requiring an erosion control plan with mitigation resulting in only short-term, localized erosion.
- **Major-**Long term erosion despite implementation of an erosion control plan.
- **Duration:**
 - **Short-term-**Lasting only during the construction period.
 - **Long-term-**Essentially a permanent post-construction impact.

5.1.2 Alternative A (No-Action Alternative) Impacts on Soils

Analysis- The No Action Alternative would leave the site unchanged in terms of erosion potential but the ability to revegetate the area with plants more suitable for the soils and surroundings would be inhibited with the current plant cover.

Conclusion- The No-Action Alternative would have negligible short-term and long-term impacts on soils at the project site.

Cumulative Effects- There would be no known cumulative effects related to this alternative.

Impairment: There would be no impairment of Riverway soil resources due to this alternative.

5.1.3 Alternative B (Restoration Project) -Impact on Soils

Analysis- The Restoration Project would take about three to four weeks to complete and would result in about four acres of disturbed soils. Although state of the art erosion control measures would be in place, and the project would be implemented in a sequence that minimizes the amount of exposed soil at any one time, there would be a short periods of time when erosion and associated sediment might enter the Namekagon. This would primarily involve an unexpected, high-intensity storm.

Conclusion- The Restoration Alternative would have moderate short-term erosion risks and long-term positive impacts on the revegetation potential of the project site.

Cumulative Effects- There would be no known negative cumulative effects related to this alternative.

Impairment: There would be no impairment of Riverway soil resources due to this alternative.

5.2 Impacts on Water Quality

5.2.1 Methodology

Impact analysis focused on protection of water quality in the Namekagon River, Cap Creek, and the Schultz Ponds area both during restoration activities (short-term) and after the completion of the project (long-term). Control of erosion during restoration would be the key concern.

Basis for analysis:

Erosion: short (few minutes to hours) and long-term (hours to weeks) erosion are potential results of the restoration project.

Intensity, Duration, and Type of Impact

- **Negligible-**no change to very small change in water quality of any of the water bodies in the area.
- **Minor-** Short-term (minutes to several minutes) localized water quality impacts, primarily sediment and turbidity. Few mitigation measures necessary.

- **Moderate-** Mitigation measures necessary to prevent measurable water quality changes. Although mostly effective, there would be episodes of short to moderate term (several minutes to several hours), localized water quality impacts, primarily sediment and turbidity.
- **Major-** There would be measurable long-duration (days to weeks) water quality impacts despite mitigation measures.
- **Duration:**
 - **Short-term-** possible during the project but diminishing to background levels at or near the completion of the project.
 - **Long-term-** ongoing for the several months or years after completion of the project.

5.2.2 Alternative A (No-Action Alternative) Impacts to Water Resources

Analysis- Since there is no site disturbance, the No Action Alternative would have no impacts on water quality.

Conclusion- The No Action Alternative would have negligible impact on the Namekagon River, Cap Creek, and the Schultz Ponds water resources.

Cumulative Effects- There would be no known negative cumulative effects due to this alternative.

Impairment: There would be no impairment of Riverway water resources due to this alternative.

5.2.3 Alternative B (Restoration Project)-Impacts on Water Resources

Analysis- The restoration alternative would involve disturbing approximately four acres of soil adjacent to still and moving surface water. The project would be conducted in sequences to ensure that the least amount of soil is exposed at any one time. In other words, work would be conducted at a specific site, the site stabilized, then the project would move on to the next section. Sediment control measures would be instituted to keep soil from reaching the Namekagon River. Despite these measures, occasional short-term, isolated erosion would occur especially in the event of heavy rain (high intensity rainfall over a short period of time) or where sediment control measures are not adequate. There would also be some erosion in new channels as streamflow was diverted to the channel for the first time. Sediment might have some effect on aquatic organisms in the first 10 to 500 feet of the river which would end after the storm event had subsided. Erosion control would be a top priority for onsite supervision and any problem areas not adequately protected would be responded to immediately.

In the event any erosion does occur that enters the Namekagon, there would be some minor impacts to aquatic organisms and habitat as the material settles out. This includes covering organisms, affecting their gills, and covering habitat. Because these would be very short episodes if at all, it is predicted the impacts would be negligible and the organisms would recover without ill affects.

Conclusion- This alternative would have moderate potential impacts to water quality, primarily related to sediment and turbidity, for short-term localized events.

Cumulative Effects- There would be no known cumulative effects due to this alternative. Potential positive cumulative effects relate to the long-term goal of restoring more of Cap Creek to brook trout habitat.

Impairment: There would be no impairment of Riverway water resources due to this alternative.

5.3 Impacts on Wetlands

5.3.1 Methodology

Impact analysis focused on the effects of the alternatives on wetlands.

Basis for analysis:

Wetland impacts: Changes in jurisdictional wetlands due to fill, loss of wetland vegetation, or other drainage.

Intensity, Duration, and Type of Impact

- **Negligible-** Wetlands or other waters of the U.S. neither directly impacted by fill nor indirectly impacted by changes in drainage patterns.
- **Minor-** Fill in wetlands below the Nationwide Permit threshold of 0.1 acres and/or indirect impacts from changes in drainage patterns.
- **Moderate-** Fill of 0.1 to 0.5 acres of wetland requiring a permit from the Corps of Engineers
- **Major-** Fill on any wetland with exceptional habitat quality or fill of greater than 0.5 acres of wetlands
- **Duration:**
 - **Short-term-** temporary impact (no loss of wetland functioning) during project activity.
 - **Long-term-** permanent positive or negative impacts to wetlands.

5.3.2 Alternative A (No-Action Alternative) Impacts on Wetlands

Analysis- With no activity, there would be no change in the status of the wetlands in the project area.

Conclusion- This alternative would have negligible impacts to wetlands.

Cumulative Effects- There are no known cumulative impacts from this alternative.

Impairment: There would be no impairment of Riverway wetland resources due to this alternative.

5.3.3 Alternative B (Restoration Project)-Impacts on Wetlands

Analysis- Under the restoration alternative, the edges of the ponds would be altered and 0.151 acres of associated wetland lost. In this alternative, the lower segment of the present Cap Creek would lose its flow but not the backwater from the Namekagon River. That section would revert to 0.33 acres of wetland habitat for a net gain in wetlands of 0.179 acres. Consequently, a moderate amount of wetlands would be lost under the definition above, and a moderate amount of wetlands would be gained. A Corps of Engineers permit for the project has been applied for, to insure timely processing of the permit, should the project be selected.

Conclusion- This alternative would have a moderate beneficial impact on wetlands and would be long-term.

Cumulative Effects- With the addition of 0.179 acre of wetland, the alternative would have a positive cumulative effect.

Impairment: There would be no impairment of Riverway wetland resources due to this alternative.

5. 4 Impacts on Ecological Resources (Plants, Animals, Habitat, Threatened and Endangered Species, and Introduction of Exotic Species)

5.4.1 Methodology

Impact analysis focused on the amount of disturbance to existing on-site terrestrial and aquatic natural communities, and the risk of introducing exotic plants or animals. Potential for ecological restoration is also a factor in evaluation of impacts.

Basis for analysis: The amount of direct disturbance to terrestrial and aquatic communities present at the sites. Impacts on any state or federal rare, threatened, or endangered species were also assessed.

Intensity, Duration, and Type of Impact

- **Negligible-** No native terrestrial plant communities and/or aquatic communities would be disturbed and there would be no direct or indirect impacts on native flora and fauna, including state and federally listed species. The risk of introducing exotic species is minimal such as what might be carried in on worker's boots.
- **Minor-** Disturbance (surface disturbance and clearing of vegetation by heavy equipment) of regionally typical native terrestrial plant communities and/or aquatic communities would be limited to under one acre for terrestrial communities and to highly localized areas of Cap Creek and Schultz Ponds. There would be indirect impacts to federally or state listed species, but the project would not adversely impact these species. There is a minor risk of introducing exotic species.
- **Moderate-** Disturbance of regionally typical native terrestrial plant communities and/or aquatic communities would occur. The area of disturbance would be one to five acres of terrestrial habitat and several hundred square feet of aquatic habitat. There could be indirect impacts to federally listed species but the impacts are not likely to adversely impact these species. The risk of introducing exotic species is moderate.
- **Major-** Disturbance of greater than five acres of regionally typical terrestrial plant community or any acreage of critical habitat for federally listed species.
- **Duration:**
 - **Short-term-** Complete disturbance recovery in less than one growing season.
 - **Long-term-** Complete disturbance recovery in two or more growing seasons.

5.4.2 Alternative A (No-Action Alternative)-Impacts on Ecological Resources

Analysis- The terrestrial and aquatic habitats and their respective animal communities would remain unchanged and undisturbed under this alternative.

Conclusion- The No Action Alternative would have no measurable impacts on terrestrial and aquatic ecological resources and threatened and endangered species, and minimal risk of invasion by exotic plants.

Cumulative Effects- There are no known cumulative effects from this alternative.

Impairment: There would be no impairment of Riverway ecological resources due to this alternative.

5.4.3 Alternative B (Restoration Project)-Impacts on Ecological Resources

Analysis- Restoration of the area would require site disturbance, fill, slope stabilization, heavy equipment movement, and revegetation. The restoration

alternative would require moderate site disturbance of a regionally typical terrestrial and aquatic community over nearly four acres. During the construction and stabilization phase, this would displace animals that usually use the area for nesting, foraging, and reproduction. Until the site is revegetated, vegetation would be replaced by bare soils, some of which would retain seeds and roots of the existing vegetation for later regrowth.

Access to the site would require a route through a pine plantation and require removal of a few red-pine and shrubs. The plantation itself is an unnatural feature and may at some time in the future be selectively harvested to provide a more natural woodland. The access route would be revegetated as part of the project.

The risk of introducing exotic species is moderate, primarily through importation of fill material and on the tracks and tires of heavy equipment. To minimize the risk of an invasion by exotics, all equipment would be cleaned offsite to remove seeds and plant parts. The site would be monitored over time and any exotic plants would be eradicated.

The overall site disturbance would be short-term and site restoration would be complete in one growing season. On the positive side, the new stream course would provide habitat that would attract a wide variety of aquatic organisms, especially aquatic insects and a variety of cold water fish, including brook trout.

Threatened and Endangered Species: There could be indirect and minor negative impacts to federally listed species (bald eagle, gray wolf, and Canada lynx) but the impacts are not likely to adversely impact these species. Canada lynx and Fassett's locoweed have not been documented in the project area and therefore would not be impacted. Using the language of the Section 7 of the Endangered Species Act, the proposed project "may affect, but not likely to adversely affect" gray wolves, Canada lynx, Fassett's locoweed, and bald eagles. The U.S. Fish and Wildlife Service agreed with this statement.

Conclusion-There would be moderate disturbance and displacement of regionally typical terrestrial and aquatic communities until the site was stabilized. The duration would be short-term and stabilization would occur within the growing season. No threatened or endangered species would be directly impacted.

Cumulative Effects- The effects of this project would not be cumulative.

Impairment: There would be no impairment of Riverway ecological resources due to this alternative.

5.5 Impacts on Recreation and Visitor Use and Scenic Resources

5.5.1 Methodology

Impact analysis focuses on the recreational setting, visitors' experiences, and scenic resources of the project area.

Basis for analysis:

Naturalness, scenic qualities, and recreational and educational opportunities are evaluated for each alternative. Contrary to the analyses above, this evaluation discusses the positive aspects of each alternative.

Intensity, Duration, and Type of Impact

- **Negligible-** Conditions remain unchanged from the current situation.
- **Minor-** There is small noticeable improvements in scenery, recreational opportunities, or naturalness of the area.
- **Moderate-** There is noticeable improvement over current conditions both in the realm of naturalness, and recreational and educational opportunities.
- **Major-** There are vast improvements over current conditions and the area becomes a trip-destination location.
- **Duration:**
 - **Short-term-** Lasting one season or less.
 - **Long-term-** Permanent post-project improvements.

5.5.2 Alternative A (No-Action Alternative)- Impacts on Recreation and Visitor Use and Scenic Resources

Analysis- There is no change in the naturalness, and recreational, scenic, and educational opportunities in the project area.

Conclusion- There are negligible short or long-term improvements to the naturalness, and recreational and scenic opportunities of the area.

Cumulative Effects- There are no known cumulative effects.

Impairment: There would be no impairment of Riverway recreational, visitor use, or scenic resources due to this alternative.

5.5.3 Alternative B (Restoration Project)- Impacts on Recreation and Visitor Use and Scenic Resources

Analysis- During the project, which should last less than a month, there will be obvious heavy equipment operations and associated noise adjacent to the Namekagon River. Until the site revegetates, it would look barren and impacted. Once completed, there would be a noticeable improvement in the naturalness of the project area. What were limited-habitat ponds would have been converted to a cold-water aquatic community stream course. The banks would be stabilized and revegetated with tamarack, white pine, and other native trees and shrubs.

Cover in the stream would provide habitat for fish strongly enhancing the possibility of encountering brook trout while catch and release fishing. From the river, the area would resemble a typical tributary stream joining the Namekagon River. Adjacent wetlands would provide habitat for a variety of plants and animals. The ability to view springs boiling out of the substrate might be lost for some of the existing springs, but enhanced for other springs.

Conclusion- There would be moderate positive long-term improvements resulting from this alternative, and short-term negative effects related to the noise and commotion and barren look of the site until it is revegetated within the first growing season.

Cumulative Effects- There would be long-term positive cumulative effects by allowing a greater portion of Cap Creek to be restored to a cold water stream which supports a diverse aquatic community, including brook trout.

Impairment: There would be no impairment of Riverway recreational, visitor use, or scenic resources due to this alternative.

5.6 Impacts on Prehistoric and Historic Resources

5.6.1 Methodology

Impact analysis focuses on the possible destruction, damage, or loss of prehistoric or historic artifacts.

Basis for analysis:

Potential harm to archeological resources is evaluated for both alternatives.

Intensity, Duration, and Type of Impact

- **Negligible-** Conditions remain unchanged from the current situation.
- **Minor-** There is small area of site disruption and surface disturbance. Chances of encountering an archeological artifact are very slight based on input from the State Historic Society and NPS Archeologists.
- **Moderate-** There is noticeable earth movement and site disruption. Chances of encountering an archeological artifact are 30 to 50 percent.
- **Major-** There is extensive surface disturbance in an area thought to contain archeological artifacts.
- **Duration:**
 - **Short-term-** A few minutes to a few hours.
 - **Long-term-** Nearly permanent.

5.5.2 Alternative A (No-Action Alternative)- Impacts on Prehistoric and Historic Resources

Analysis- There is no change in the project area and any artifacts will remain undisturbed, unless accidentally discovered by a visitor.

Conclusion- There are negligible short or long-term impacts to the prehistoric and historic resources of the project area.

Cumulative Effects- There are no known cumulative effects.

Impairment: There would be no impairment of Riverway prehistoric and historic resources.

5.5.3 Alternative B (Restoration Project)- Impacts on Prehistoric and Historic Resources.

Analysis- The project site has been highly disturbed by past and present human activities. However, there are no archeological or architectural properties listed in the National Register of Historic Places in the vicinity of the project (WHS, 2002). Consultation under Section 106 of the National Preservation Act and Archeological Resources Protection Act was sought from the Midwest Archeological Center, Midwest Regional Office, State Historical Society of Wisconsin, the St. Croix Chippewa Indians of Wisconsin, and the Lac Court Oreilles Chippewa Indians. They indicated there were no known archeological or historical resources in the immediate area that would be impacted by the proposed project. There may be archeological sites in the general area, but the area to be disturbed has been checked and none were found.

During earthmoving activities with heavy equipment, any artifacts that are within the project area may be uncovered, moved and reburied, damaged or destroyed, or left exposed on the surface. There would be an on-site para-professional archeologist who will constantly monitor earthmoving activities in order to spot any potential artifacts and prevent their displacement or destruction. This person would have the power to cease operations until any cultural resource issues are resolved.

Conclusion- Because the area has been heavily disturbed in the past, the chances of encountering an archeological resource are slight. The area to be disturbed is relatively small. With a para-professional archeologist on site, the duration of impacts would be short-term. Any artifacts that are spotted would be quickly documented and safely removed and the operation shut-down until it was clear that no other artifacts were present. In conclusion, the intensity of impact would therefore be considered to be Minor and the duration Short-term.

Cumulative Effects- There are no known cumulative effects.

Impairment: There would be no impairment of Riverway prehistoric and historic resources.

6.0 Determinations, Statement of Findings, and Approval

6.1 Wetlands

Because the wetlands that would be impacted are incidental artificial or intentional artificial wetlands, they are exempt from NPS Director's Order 77: Wetlands requirements for a Statement of Findings and one will not be developed. They are not exempt from state and U.S. Army Corps of Engineers jurisdiction and appropriate permits will be obtained for any work in wetlands.

6.2 Floodplains

Draft Director's Order #77-2 requires a Statement of Finding for Floodplain Management. According to the analysis in the floodplain section (4.2.1 above), the project area is not within the 100-year floodplain of the Namekagon River and is therefore exempt from the draft order. This concludes any further work on a statement of finding for floodplain management.

6.3 Impairment of a Natural Park Service unit

The Natural Park Service Organic Act and related laws mandate that resources are passed on to future generations "unimpaired". Based on this environmental assessment, the proposed action alternative does not impair the values for which the Riverway was included in the Natural Park Service system.

6.4 Wild and Scenic Rivers Act, Section 7 Evaluation of Direct and Adverse Impacts

As discussed in Section 4.7 titled "Wild and Scenic River," the Namekagon is a component of the National Wild and Scenic Rivers System. As such it is protected under Section 7(a) of the Wild and Scenic Rivers Act (Public Law 90-542). Section 7(a) states that "no department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration."

Water resources projects are virtually any projects that would require work below the ordinary high water mark of the river. They include bridges, boat ramps, boat docks, and some types of fish and wildlife enhancement projects. This project would require work below the ordinary high water mark to connect the new channel to the Namekagon River. Therefore, this project is subject to a Section 7(a) evaluation. The evaluation follows.

The Namekagon River was established to protect its free-flowing character, its water quality and its outstandingly remarkable scenic, recreational and fish and

wildlife values. The proposed project would have no effect on the free-flowing character of the Namekagon because the project is on an adjacent tributary and will actually enhance flow in the Namekagon. As described in the section of the EA on water quality the project would have no effect on water quality. Water quality would be protected by state of the art erosion and sediment control, constant monitoring and follow-up. The proposed project would enhance the scenic values of the Namekagon River by restoring a native brook stream to natural conditions. Recreational value would be enhanced by providing a new opportunity for native brook trout fishing along the restored stream. Fish and wildlife values would also be enhanced by implementation of the proposed project. The restored stream would provide conditions suitable not only for native brook trout, but for wildlife that depends on the cover provided by natural riparian areas. All types of wildlife would benefit from restoring this stream, including aquatic insects, turtles, songbirds, and mammals.

Therefore, pursuant to the requirements of Section 7(a) of the Wild and Scenic Rivers Act, the National Park Service has determined that the proposed restoration project **would not** have a direct **and** adverse impact to the values for which the Namekagon River was included in the National Wild and Scenic Rivers System

Approval of Environmental Assessment, Statement of Findings for Wetlands and Floodplains, Impairment Determination, and Section 7(a) Evaluation

Signed _____, Superintendent,
St. Croix National Scenic Riverway, _____, 2003.

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Consultation and Coordination

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National Park Service-Regional and Servicewide
Natural Resources Preservation Program-Disturbed Lands
Project Evaluation Panels
National Park Service-Water Resources Division-Jim Tilmant

Appendix A: Plants and Animals of the Project Area

Plants

A total of 98 plant species were identified.

Trees, Shrubs, and Woody Perennials

White Pine

Pinus strobus

Red Pine

Pinus resinosa

Jack Pine
 Northern Red Oak
 Northern White-Cedar
 Balsam Fir
 Paper Birch
 Quaking Aspen
 Blue Spruce
 Juneberry
 Chokecherry
 Red-osier Dogwood
 Silky Dogwood
 Northern Elderberry
 American Filbert
 Black Willow
 Speckled Alder
 Staghorn Sumac
 Pussy Willow
 Meadowsweet
 Steeplebush
 Smooth Rose
 Red Raspberry
 Blackberry species

Pinus banksiana
Quercus rubra
Thuja occidentalis
Abies balsamea
Betula papyrifera
Populus tremuloides
Picea pungens
Amelanchier laevis
Prunus virginiana
Cornus stolonifera
Cornus amomun
Sambucus canadensis
Corylus americana
Salix nigra
Alnus rugosa
Rhus typhina
Salix discolor
Spiraea latifolia
Spiraea tomentosa
Rosa blanda
Rubus strigosus
Rubus sp.

Herbaceous Plants

Equisetum
 Sensitive Fern
 Ostrich Fern
 Bracken Fern
 Kentucky Bluegrass
 Timothy
 Canada Mayflower
 Purple-fringed Orchis
 Sweetfern
 Wild Hops
 Stinging Nettles
 Pinkweed
 Bladder Campion
 Snowy Campion
 Tall Meadow-rue
 Canada Anemone
 Virgin's-Bower
 yellow mustard species
 white long pod Mustard species
 Lupine - domesticated?
 Red Clover
 White Clover
 Snow-on-the-Mountain
 Spotted Jewelweed
 Common St. John's Wort
 Violet species
 Common Evening Primrose
 Angelica
 Whorled Loosetrife

Equisetum sp.
Onoclea sensibilis
Pteritis pensylvanica
Pteridium aquilinum
Poa pratensis
Phleum pratense
Maianthemum canadense
Habenaria fimbriata
Comptonia peregrina
Humulus Lupulus
Urtica dioica
Polygonum pennsylvanicum
Silene cucubalus
Silene nivea
Thalictrum polygamum
Anemone canadensis
Clematis virginiana

Lupinus sp.
Trifolium pratense
Trifolium repens
Euphorbia marginata
Impatiens capensis
Hypericum perforatum
Viola sp.
Oenothera biennis
Angelica atropurpurea
Lysimachia quadrifolia

Starflower
 Bindweed species
 Forget-me-not
 Heal-all
 Rough Hedge-nettle
 Wild Mint
 Common Mullein
 Turtlehead
 Common Plantain
 Cleavers
 Spotted Joe-pye-weed
 Canada Goldenrod
 Lance-leaved Goldenrod
 Goldenrod species
 Large-leaved Aster
 Crooked-stemmed Aster
 Panicked Aster
 Daisy Fleabane
 Black-eyed Susan
 Giant Sunflower
 Yarrow
 Ox-eye Daisy
 Bull Thistle
 Canada Thistle
 Swamp Thistle
 Spotted Knapweed
 Yellow Goatsbeard
 Common Dandelion
 Lion's Foot or similar
 Orange Hawkweed
 Panicked Hawkweed
 Cinnamon Fern
 Smooth Brome (exotic)
 Peppermint (exotic)
 Jerusalem Artichoke

Trientalis borealis
Convolvulus/Ipomoea sp.
Myosotis scorpioides
Prunella vulgaris
Stachys tenuifolia
Mentha arvensis
Verbascum thapsus
Chelone glabra
Plantago major
Galium aparine
Eupatorium maculatum
Solidago canadensis
Solidago graminifolia
Solidago sp.
Aster macrophyllus
Aster prenanthoides
Aster simplex
Erigeron annuus
Rudbeckia hirta
Helianthus giganteus
Achillea millefolium
Chrysanthemum leucanthemum
Cirsium vulgare
Cirsium arvense
Cirsium muticum
Centaurea maculosa
Tragopogon pratensis
Taraxacum officinale
Prenanthes sp.
Hieracium aurantiacum
Hieracium paniculatum
Osmunda cinnamomea
Bromus inermis
Mentha piperita
Helianthus tuberosus

Wetland Plants

New England Aster
 Bur-marigold

Aster novae-angliae
Bidens sp.

Aquatic Plants

Sphagnum Moss
 Bulb-bearing Water-hemlock
 Bullrush species
 Porcupine Sedge
 Sedge sp.
 Lesser Duckweed
 Rush sp.
 Water Dock
 Marsh Marigold
 Sago Pondweed
 Floating-leaved Pondweed
 Broad-leaved Arrowhead
 Elodea
 Common Cattail

Sphagnum magellanicum
Cicuta bulbifera
Scirpus sp.
Carex hystericina
Carex sp.
Lemna minor
Juncus sp.
Rumex orbiculatus
Caltha palustris
Potamogeton pectinatus
Potamogeton natans
Sagittaria latifolia
Elodea canadensis
Typha latifolia

Blue Flag
Water Smartweed
Rice Cutgrass
Sweetgale
Unknown

Iris versicolor
Polygonum amphibium
Leersia oryzoides
Myrica Gale

Wildlife

Birds 24 species

Bald Eagle
Osprey
Spotted Sandpiper
Ruby-throated Hummingbird
Eastern Kingbird
Eastern Phoebe
Least Flycatcher
Pileated Woodpecker
Northern Flicker
Belted Kingfisher
Blue Jay
American Crow
Red-breasted Nuthatch
Black-capped Chickadee
American Robin
Cedar Waxwing
Blue headed Vireo
Chestnut-sided Warbler
Common Yellowthroat
Rose-breasted Grosbeak
Pine Siskin
American Goldfinch
Chipping Sparrow
Song Sparrow

Mammals 5 species

Red Squirrel
Eastern Chipmunk
Beaver
Raccoon
White-tailed Deer

Fish 2 species

Brook Trout
Brook Stickleback

Herpetofauna 2 species

Eastern Garter Snake
Green Frog

Insects (Not all observed were recorded.) 12 species

Cicada

White Admiral Butterfly

Cabbage Moth

Yellowjacket

Honey Bee

Bumblebee

Aquatic Forms

Dragonfly nymph

Damselfly nymph

Midge larvae

Predaceous Diving Beetle

Water Boatman

Water Strider

Other aquatic invertebrates 4 species

Scud

Leech

Snail

Clam/Mussel (very small)